- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion.

REMARKS

I.   Status of the Claims

Claims 1-91 are pending in this application. No claims have been cancelled or added. Claims 1, 38, 55, 58, 61, 64, 74, 77, 80, 83, 86, and 89 have been amended to delete claim language to even more clearly recite the present invention. Specifically, the definition of k and t in formula (VI) in each amended claim previously read that "k and t, **which may be identical or different,** are each chosen from 0 and 1, with the proviso that the sum of k+t is equal to 1." In preparing this response, Applicants noted that because of the proviso, k and t actually can never be identical. Therefore, although Applicants believe that the proviso made the claims clear before the amendment, they have removed the recitation that k and t "may be identical or different" to eliminate any possible confusion. No new matter has been added by the amendments and no estoppels are intended thereby.

Applicants thank the Examiner for indicating that claims 15, 16, 21-25, 27, 28, and 40 contain allowable subject matter.

II. Response to Election of Speci s Requirement

Claims 55-66 and 70-91 have been withdrawn from consideration as being directed to non-elected subject matter. Applicants continue to traverse the Restriction Requirement. Contrary to the assertions of the Office, Applicants respectfully submit that there would not be a <u>serious</u> burden to examine all of the pending claims together. Accordingly, Applicants respectfully submit that the Restriction Requirement is improper.

Furthermore, even if the Restriction Requirement is maintained, if product claims are found to be patentable, withdrawn process claims which include the recitations of the product claims should be rejoined. The Examiner is reminded that M.P.E.P. § 821.04 states:

> However, if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of an allowable product claim will be rejoined.

Thus, if product claims are found to be allowable, the process claims which include the composition recitations of the allowed claims should be rejoined.

Therefore, Applicants respectfully request that the Restriction Requirement be reconsidered and withdrawn, in view of the lack of a serious burden. Applicants also request that even if the Restriction Requirement is maintained, if the product claims are found to be allowable, the process claims which have the recitations of the allowed product claims should be rejoined.

III. **R sponse to § 103 R jection**

The Office rejects claims 1-14, 17-20, 26, 29-39, 41-54, and 67-69 under 35 U.S.C. § 103(a), alleging that the teachings and suggestions present in U.S. Patent No. 5,009,880 to GROLLIER et al. ("GROLLIER") render the instant invention obvious. The Office concedes that GROLLIER "does not teach combining cyclohomopolymer of dialkylallylammonium and quaternary polyammonium polymers as claimed" but argues that GROLLIER teaches combining quaternary polyureylene polymers with other cationic polymers, (citing col. 31, line 16-20) and further suggests the combination of more than one cationic polymer because GROLLIER "is written in open language," (citing col. 46 line 32-36, and col. 50 line 34-38). See Office Action at p. 3. The Office concludes that it would have been obvious to combine a cationic cylcohomopolymer of dialkylammonium polyammonium with a cationic quaternary polyammonium polymer in a composition for the oxidation dyeing of keratin fibers as claimed, alleging that "[s]uch a modification would be obvious because one would expect that the use of a cationic cyclohomopolymer of dialkylammonium polyammonium with a cationic quaternary polyammonium polymer would be similarly applicable and have the same conditioning effect when applied in the composition for conditioning and dyeing as taught by GROLLIER et al." Office Action at pages 3-4.

Applicants respectfully traverse the rejection.

Although the test for establishing an implicit teaching, motivation, or suggestion from separate statements of one reference is what the combination of these two statements would have suggested to those of ordinary skill in the art, the two statements cannot be viewed in the abstract. In re Kotzab, 55 USPQ2d 1313, 1317

(Fed. Cir. 2000). Rather, they must be considered in the context of the teaching of the entire reference. *Id.* Further, a rejection based on one reference cannot be predicated on the mere identification of individual components of claimed limitations. *Id.* Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *Id.* A convincing line of reasoning must be presented as to why a skilled artisan would pick and choose various elements and/or concepts from the prior art to arrive at the claimed invention. *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Int. 1985).

In this case, as noted above, the Office concedes that GROLLIER does not teach combining cyclohomopolymer of dialkylallylammonium and quaternary polyammonium polymer as claimed. Applicants agree.

Further, it is Applicants' position that GROLLIER fails to provide sufficient motivation to combine these components, let alone combine these components with an oxidation dye. Applicants respectfully submit that the teachings of GROLLIER relied on by the Office are too broad. For instance, 27 columns of GROLLIER are dedicated to teaching 17 broad categories of exemplary cationic polymers. *See* Col. 4 to col. 31. Applicants emphasize that these 17 broad categories are exemplary: GROLLIER's disclosure is even broader. *See e.g.*, col. 4, lines 1-3 (the cationic polymers have a molecular weight of 500 to 2 to 5 million); col. 4, lines 4-6 (the cationic polymers generally have primary, secondary, tertiary, or quaternary amino groups). Thus, GROLLIER discloses a broad genus of at least millions and millions of different cationic polymers, wherein millions of these polymers do not even fall within the scope of the

present claims. *See e.g.*, categories (2) and (5) in GROLLIER's polymer list. For example, even though the Office cites col. 9, line 59 to col. 10, line 66 of GROLLIER on page 3 of the Office Action, Applicants note that all of these quaternized polymers are outside of the scope of the present invention because of the manner in which A, B, A_1, and B_1 are defined in this section of GROLLIER. Thus, GROLLIER discloses at least millions and millions of cationic polymers that are outside the scope of the present invention.

GROLLIER also teaches a broad spectrum of uses for its compositions. Although GROLLIER teaches dyeing compositions, GROLLIER teaches many other compositions such as shampoos, rinsing lotions, wave-setting lotions, lotions for brushing, restructuring lotions, nail treatment compositions, aftershave lotion, toilet water. Col. 51, lines 8-17; col. 57, lines 23-33. Applicants also submit that not all of GROLLIER's dyeing compositions involve oxidation dyes. Thus, GROLLIER broadly discloses many uses that are outside the scope of the present invention.

In view of the at least millions of possible cationic polymers that are outside the scope of the present invention and in view of the number of uses disclosed by GROLLIER, Applicants respectfully submit that there would have been insufficient motivation to choose either of the presently claimed polymers, let alone to combine the presently recited cyclohomopolymer of dialkylallylammonium with the presently recited quaternary polyammonium polymer, and, let alone to combine the recited cyclohomopolymer of dialkylallylammonium, the quaternary polyammonium polymer, and an oxidation dye.

As noted above, the Office cites col. 31, lines 16-20 of GROLLIER for the proposition that GROLLIER teaches combining quaternary polyureylene polymers with other cationic polymers. Based on the Office's reasoning, however, it would have been obvious to combine any of GROLLIER's quaternary polyureylene polymers with any cationic polymer. Thus, Applicants respectfully submit that the Office is relying on overly broad teachings of GROLLIER.

Furthermore, even though the 91-column specification of GROLLIER discloses oxidation dyes, GROLLIER fails to disclose the combination of an oxidation dye with a combination of cationic polymers. Applicants respectfully submit that there is no specific motivation within GROLLIER to provide a combination of an oxidation dye with a combination of cationic polymers. Specifically, GROLLIER discloses 217 examples, with only seven directed to dyeing compositions, and not one of these containing a composition with more than one cationic polymer. Accordingly, not one of these seven dyeing examples shows a cyclohomopolymer of dialkylallylammonium in combination with a quaternary polyammonium polymer, let alone the recited polymers in combination with an oxidation dye.

Thus, the examples in combination with the very broad and general disclosures relied upon by the Office hardly provide the requisite motivation to choose, from the pages and pages of disclosure in GROLLIER, a dialkyldiallylammonium cyclohomopolymer within the scope of the present invention, combine it with a quaternary polyammonium within the scope of the present invention, and further combine it with an oxidation dye. By not providing any particular guidance or incentive to select the particular ingredients of the present invention from the at least millions and

millions of possible combinations disclosed by GROLLIER, the Office has failed to provide a convincing line of reasoning as to why a skilled artisan would pick and choose various elements to arrive at the present invention.

In view of the above, Applicants respectfully request that the rejection under 35 U.S.C. § 103, be withdrawn.

IV.   Conclusion

Applicants respectfully request reconsideration of this application and the timely allowance of all pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By:_____
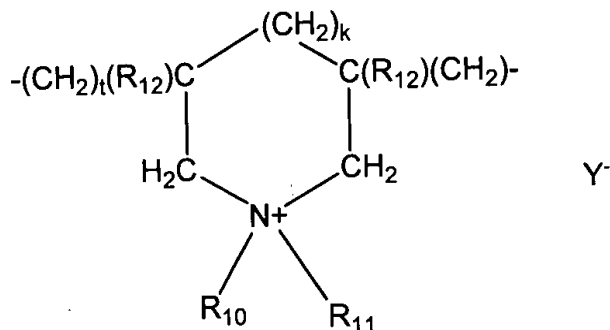Steven J. Helmer
Reg. No. 40,475

Dated: August 30, 2002

APPENDIX

1. (Amended)   A composition for oxidation dyeing keratin fibres comprising, in an appropriate dyeing medium, (1) at least one oxidation dye, (2) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

(VI)

$$-(CH_2)_t(R_{12})C \overset{\displaystyle (CH_2)_k}{\diagup \diagdown} C(R_{12})(CH_2)-$$

$$H_2C \qquad CH_2 \qquad\qquad Y^-$$

$$N^+$$

$$R_{10} \qquad R_{11}$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;
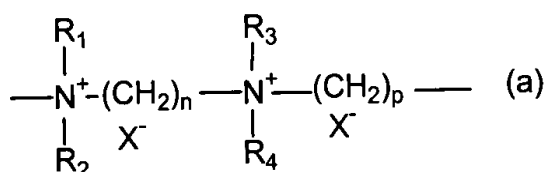
- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

(3) at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$—\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{N^+}}-(CH_2)_n\underset{X^-}{}—\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}—(CH_2)_p\underset{X^-}{}—\quad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;
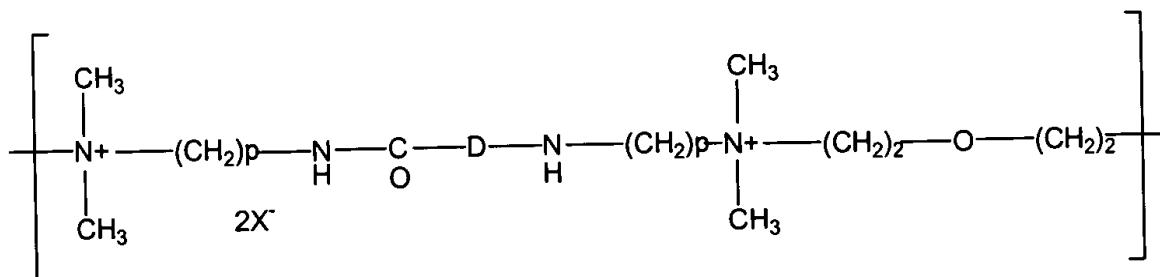
- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} \!\!-\!\! (CH_2)p \!\!-\!\! \underset{H}{N} \!\!-\!\! \underset{O}{C} \!\!-\!\! D \!\!-\!\! \underset{H}{N} \!\!-\!\! (CH_2)p \!\!-\!\! \begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} \!\!-\!\! (CH_2)_2 \!\!-\!\! O \!\!-\!\! (CH_2)_2 \right] \quad 2X^-$$

(VIII)

wherein:
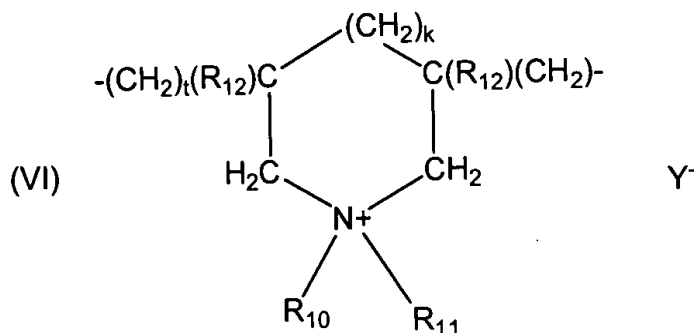
- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r$-CO- groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids.

38. (Amended)   A ready-to-use cosmetic composition for oxidation dyeing keratin fibers, wherein said ready-to-use cosmetic composition is obtained by including at least one dyeing composition (A) in a dyeing medium, comprising:

- at least one oxidation dye,

- at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

$$-(CH_2)_t(R_{12})C \overset{\displaystyle (CH_2)_k}{\underset{\displaystyle H_2C \qquad CH_2}{\diagup \diagdown}} C(R_{12})(CH_2)-$$
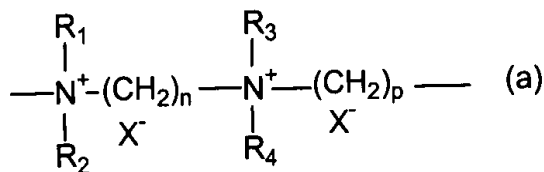
(VI)
$$N^+$$
$$R_{10} \qquad R_{11}$$
$$Y^-$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

- at least one quaternary polyammonium polymer chosen from:

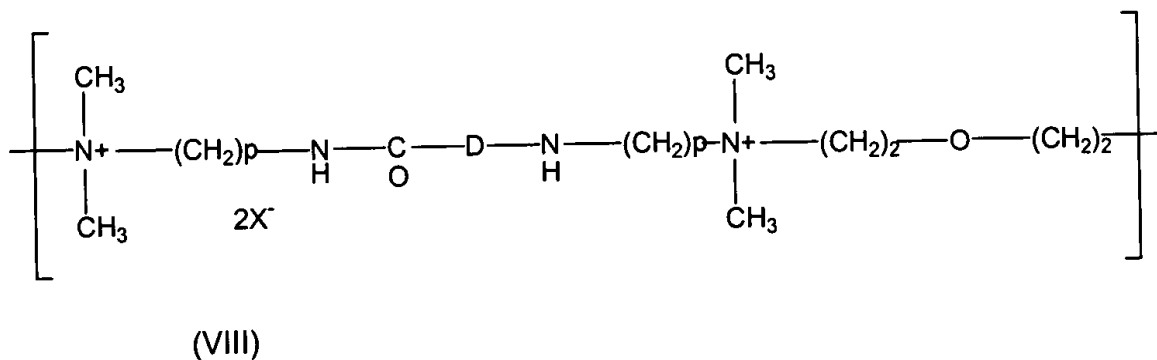(i) polymers comprising repeating units of formula (a):

$$-\underset{\underset{R_2}{|}}{\overset{\underset{R_1}{|}}{N^+}}-(CH_2)_n\underset{X^-}{}-\underset{\underset{R_4}{|}}{\overset{\underset{R_3}{|}}{N^+}}-(CH_2)_p\underset{X^-}{}-\quad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\underset{\underset{CH_3}{|}}{\overset{\underset{CH_3}{|}}{N^+}}-(CH_2)p\underset{2X^-}{}-\underset{H}{N}-\underset{O}{C}-D-\underset{H}{N}-(CH_2)p-\underset{\underset{CH_3}{|}}{\overset{\underset{CH_3}{|}}{N^+}}-(CH_2)_{\overline{2}}-O-(CH_2)_{\overline{2}}\right]$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids, with at least one oxidizing composition (B) comprising at least one oxidizing agent.

55. (Amended)   A method for oxidation dyeing keratin fibers comprising:

(a) applying to said keratin fibers at least one dyeing composition (A) comprising, in a dyeing medium:

- at least one oxidation dye, and

- a combination comprising:

- (I) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

$$(VI) \quad \begin{array}{c} (CH_2)_k \\ -(CH_2)_t(R_{12})C \qquad C(R_{12})(CH_2)- \\ H_2C \qquad\qquad CH_2 \\ N^+ \\ R_{10} \qquad R_{11} \end{array} \qquad Y^-$$

wherein:

-Appendix 6-

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

- (II) at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$—\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{N^+}}—(CH_2)_n\underset{X^-}{}—\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}—(CH_2)_p—\underset{X^-}{} \quad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

-Appendix 7-

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

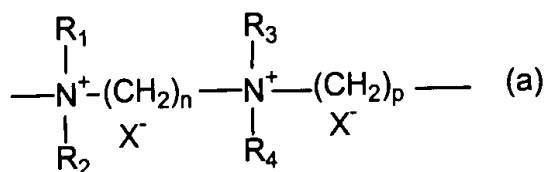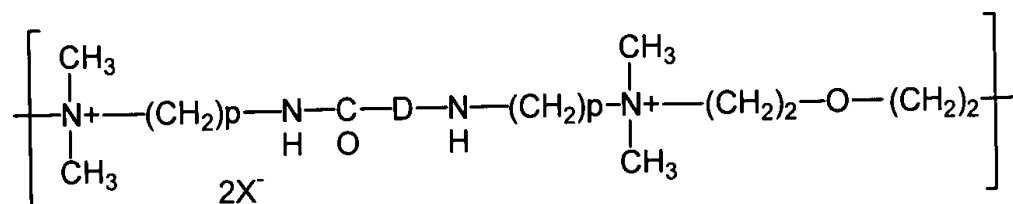(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} -(CH_2)p-\underset{H}{N}-\underset{O}{C}-D-\underset{H}{N}-(CH_2)p-\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array}-(CH_2)_2-O-(CH_2)_2 \right]$$

2X⁻

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and –(CH₂)ᵣ-CO- groups, wherein r is a number equal to 4 or 7, and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids, and

(b) developing the color with the aid of at least one oxidizing composition (B) comprising at least one oxidizing agent, wherein said at least one oxidizing composition (B) is combined at the time of use with said at least one dyeing composition (A) or said at

-Appendix 8-

least one oxidizing composition (B) is applied sequentially to said at least one dyeing composition (A) without intermediate rinsing.
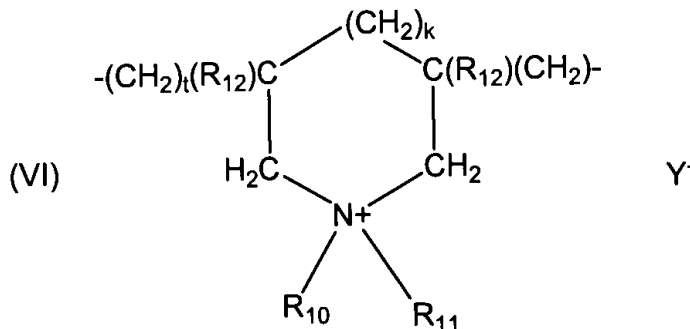
58. (Amended)   A method for oxidation dyeing keratin fibers comprising:

(a) applying to said keratin fibers at least one dyeing composition (A) comprising, in a dyeing medium:

- at least one oxidation dye, and

- a combination comprising:

- (I) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

$$-(CH_2)_t(R_{12})C \underset{H_2C \qquad\qquad CH_2}{\overset{(CH_2)_k}{\diagdown \diagup}} C(R_{12})(CH_2)- \qquad Y^-$$
$$\underset{R_{10} \qquad R_{11}}{N^+}$$

(VI)

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;
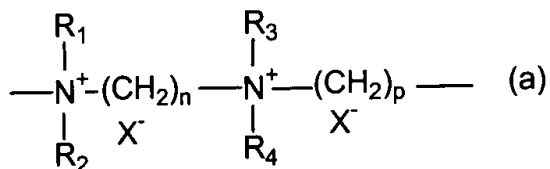
- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

-Appendix 9-

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

- (II) at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{{-}N^+}}{-}(CH_2)_n\underset{X^-}{\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{-N^+}}}{-}(CH_2)_p\ {-}\quad X^- \qquad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ \text{—N}^+\text{—}(CH_2)_p\text{—N—C—D—N—}(CH_2)_p\text{—N}^+\text{—}(CH_2)_2\text{—O—}(CH_2)_2\text{—} \\ | \qquad\qquad H\ \ O \qquad H \qquad\qquad | \\ CH_3 \qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad CH_3 \\ \qquad 2X^- \end{array}\right.$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and –(CH₂)ᵣ-CO- groups, wherein r is a number equal to 4 or 7, and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids, and

(b) developing the color with the aid of at least one oxidizing composition (B) comprising:

- at least one oxidizing agent, and

- a combination comprising at least one cyclohomopolymer of dialkyldiallylammonium as defined above and at least one other quaternary polyammonium as defined above,

- wherein said at least one oxidizing composition (B) is combined at the time of use with said at least one dyeing composition (A) or said at least one oxidizing composition (B) is applied sequentially to said at least one dyeing composition (A) without intermediate rinsing.

61. (Amended)   A method for oxidation dyeing keratin fibers comprising:

- applying to said keratin fibers at least one dyeing composition (A) comprising, in a dyeing medium, at least one oxidation dye,

- developing the color with the aid of at least one oxidizing composition (B) comprising at least one oxidizing agent,

- wherein said oxidizing composition (B) comprises a combination comprising:

- (I) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

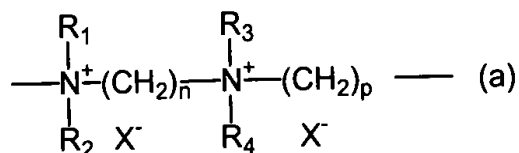$$-(CH_2)_t(R_{12})C \overset{(CH_2)_k}{\diagup\diagdown} C(R_{12})(CH_2)-$$

(VI)

$$H_2C \diagdown\diagup CH_2 \qquad Y^-$$
$$N^+$$
$$R_{10} \quad R_{11}$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

  - (II) at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$-\overset{\overset{\textstyle R_1}{|}}{\underset{\underset{\textstyle R_2 \quad X^-}{|}}{N^+}}-(CH_2)_{\overline{n}}-\overset{\overset{\textstyle R_3}{|}}{\underset{\underset{\textstyle R_4 \quad X^-}{|}}{N^+}}-(CH_2)_p - \quad (a)$$

wherein:

  - R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

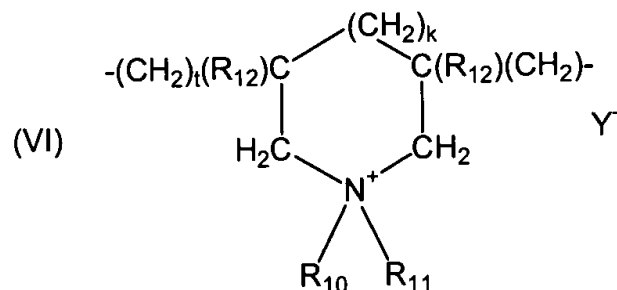 - n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} - (CH_2)p - \begin{array}{c} N \\ | \\ H \end{array} - \begin{array}{c} C \\ || \\ O \end{array} - D - \begin{array}{c} N \\ | \\ H \end{array} - (CH_2)p - \begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} - (CH_2)_2 - O - (CH_2)_2 \right] \quad 2X^-$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids,

- wherein said at least one oxidizing composition (B) is combined at the time of use with said at least one dyeing composition (A) or wherein said at least one oxidizing composition (B) is applied sequentially to said at least one dyeing composition (A) without intermediate rinsing.

64. (Amended)   A kit for dyeing keratin fibers comprising at least two compartments, wherein:

- a first compartment comprises at least one oxidation dye and a combination comprising:

(I)   at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

(VI)

$$-(CH_2)_t(R_{12})C \overset{\displaystyle (CH_2)_k}{\diagup\diagdown} C(R_{12})(CH_2)-$$

$$H_2C \diagdown \quad \diagup CH_2 \qquad Y^-$$

$$N^+$$

$$R_{10} \quad R_{11}$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

    - Y^- is an anion; and

-Appendix 15-

(II)   at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$-N^+-(CH_2)_n-N^+-(CH_2)_p-\quad (a)$$

with substituents R_1, R_2, X^- on the first N^+ and R_3, R_4, X^- on the second N^+
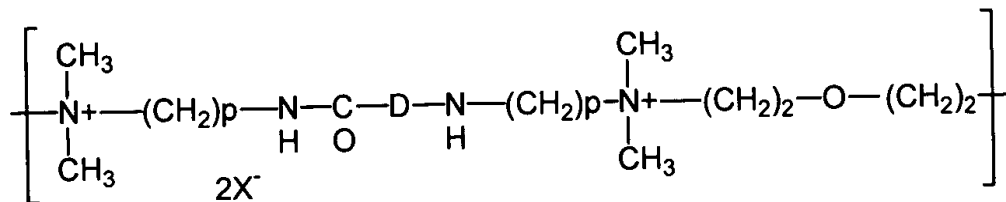
wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ -N^+-(CH_2)_p-N-C-D-N-(CH_2)_p-N^+-(CH_2)_2-O-(CH_2)_2- \\ | \quad\quad\quad\quad H \ O \ \ H \quad\quad\quad\quad | \\ CH_3 \quad 2X^- \quad\quad\quad\quad\quad\quad\quad\quad\quad CH_3 \end{array} \right]$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids, and

- a second compartment comprises at least one oxidizing agent.

74. (Amended)   A method for oxidation dyeing keratin fibers comprising:

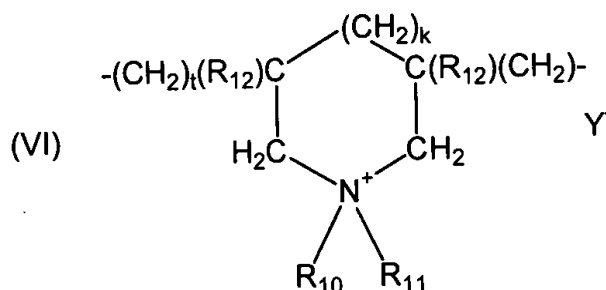(a) applying to said keratin fibers at least one dyeing composition (A) comprising, in a dyeing medium:

- at least one oxidation dye, and

(b) developing the color with the aid of at least one oxidizing composition (B) comprising at least one oxidizing agent, wherein said at least one oxidizing composition (B) is combined at the time of use with said at least one dyeing composition (A) or said at least one oxidizing composition (B) is applied sequentially to said at least one dyeing composition (A) without intermediate rinsing, wherein:

- (I) said at least one dyeing composition (A) comprises:

- at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):
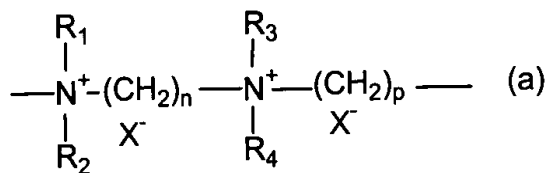
$$-(CH_2)_t(R_{12})C \overset{(CH_2)_k}{\diagup \diagdown} C(R_{12})(CH_2)-$$

(VI)

$$H_2C \diagup N^+ \diagdown CH_2 \qquad Y^-$$

$$R_{10} \quad R_{11}$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and wherein:

- (II) said at least one oxidizing composition (B) comprises:

  - at least one quaternary polyammonium polymer chosen from:

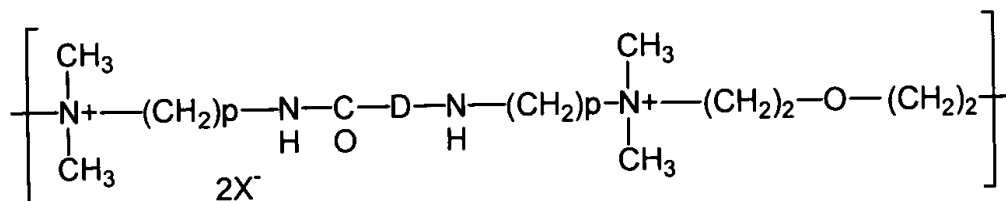   - (i) polymers comprising repeating units of formula (a):

$$-\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{N^+}}-(CH_2)_n-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}-(CH_2)_p\underset{X^-}{}\quad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

- (ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)p-\underset{H}{N}-\underset{O}{C}-D-\underset{H}{N}-(CH_2)p-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)_2-O-(CH_2)_2 \right]_{2X^-}$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids.

77. (Amended)   A method for oxidation dyeing keratin fibers comprising:

(a) applying to said keratin fibers at least one dyeing composition (A) comprising, in a dyeing medium:
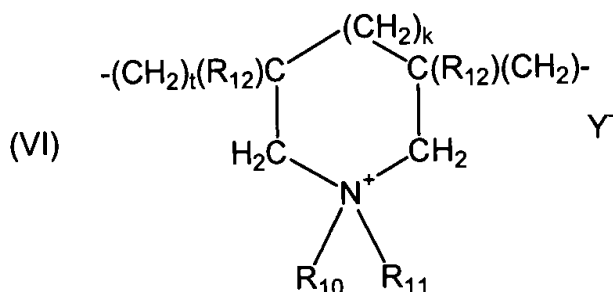
- at least one oxidation dye, and

(b) developing the color with the aid of at least one oxidizing composition (B) comprising at least one oxidizing agent, wherein said at least one oxidizing composition (B) is combined at the time of use with said at least one dyeing composition (A) or said at least one oxidizing composition (B) is applied sequentially to said at least one dyeing composition (A) without intermediate rinsing, wherein:

- (I) said at least one oxidizing composition (B) comprises:

- at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

(VI)

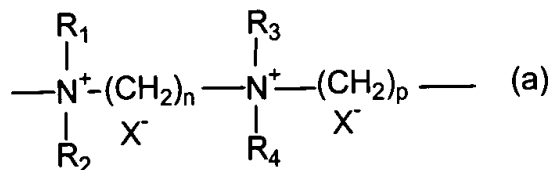$$-(CH_2)_t(R_{12})C \overset{(CH_2)_k}{\underset{H_2C}{}} C(R_{12})(CH_2)- \qquad Y^-$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and wherein:

- (II) said at least one dyeing composition (A) comprises:

     - at least one quaternary polyammonium polymer chosen from:

       - (i) polymers comprising repeating units of formula (a):
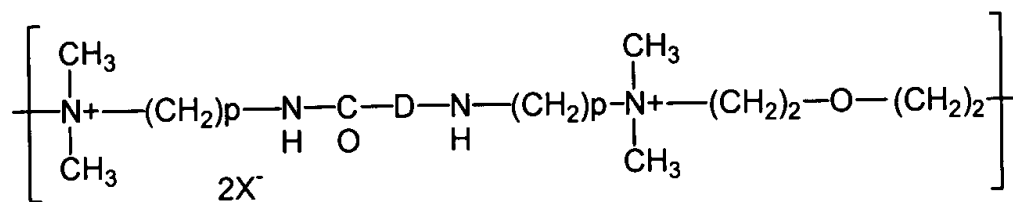
$$-\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{N^+}}-(CH_2)_n\underset{X^-}{}-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}-(CH_2)_p\underset{X^-}{}--- \quad (a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

- (ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)p-\underset{H}{N}-\underset{O}{C}-D-\underset{H}{N}-(CH_2)p-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)_2-O-(CH_2)_2\right]$$

$$2X^-$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and
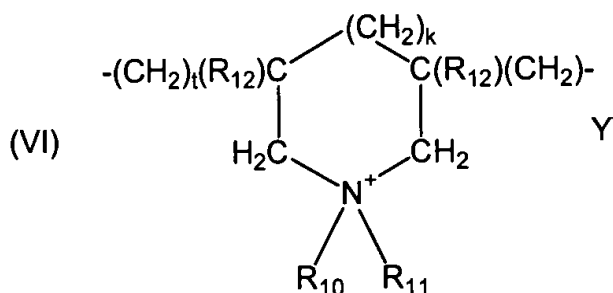
- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids.

80. (Amended) A kit for dyeing keratin fibers comprising at least two compartments, wherein:

- a first compartment comprises at least one oxidation dye and

- a second compartment comprises at least one oxidizing agent and a combination comprising:

(I) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

$$-(CH_2)_t(R_{12})C \overset{\displaystyle (CH_2)_k}{\underset{\displaystyle H_2C \;\; \underset{\displaystyle \underset{R_{10} \;\; R_{11}}{N^+}}{} \;\; CH_2}{}} C(R_{12})(CH_2)- \qquad Y^-$$

(VI)

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;
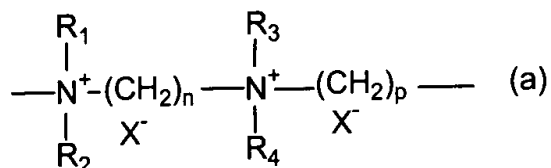
- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

(II) at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$-\underset{\underset{R_2}{|}}{\overset{\overset{R_1}{|}}{N^+}}-(CH_2)_n-\underset{\underset{R_4}{|}}{\overset{\overset{R_3}{|}}{N^+}}-(CH_2)_p-\qquad (a)$$
$$X^-X^-$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;
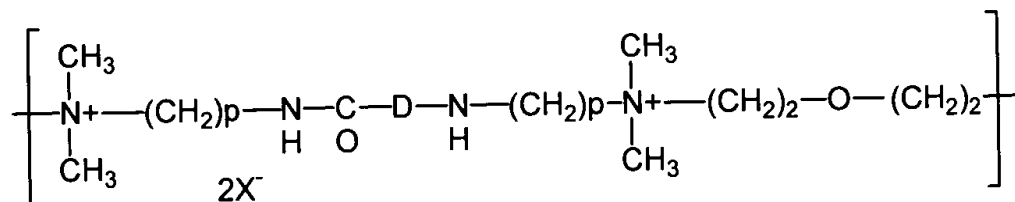
- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} -(CH_2)p - \underset{H}{N} - \underset{O}{C} - D - \underset{H}{N} - (CH_2)p - \begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} - (CH_2)_2 - O - (CH_2)_2 \right] \quad 2X^-$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and –(CH₂)r-CO- groups, wherein r is a number equal to 4 or 7, and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids.

83. (Amended)   A kit for dyeing keratin fibers comprising at least two compartments, wherein:
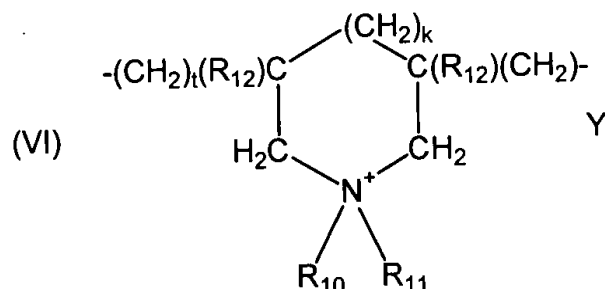
- a first compartment comprises at least one oxidation dye and a combination comprising:

(I) at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):

$$-(CH_2)_t(R_{12})C \underset{H_2C}{\overset{(CH_2)_k}{\diagup}} C(R_{12})(CH_2)- \\ \underset{N^+}{\overset{CH_2}{\diagdown}} Y^- \\ R_{10} \quad R_{11}$$
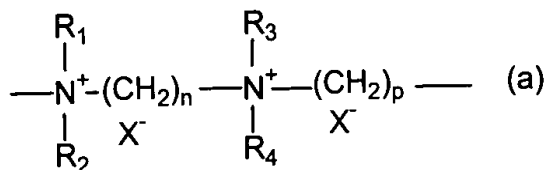
(VI)

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion; and

(II)   at least one quaternary polyammonium polymer chosen from:

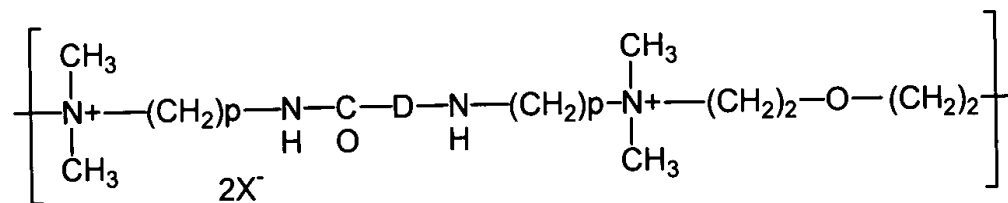(i) polymers comprising repeating units of formula (a):

-Appendix 26-

$$-N^{+}-(CH_2)_n-N^{+}-(CH_2)_p---\quad (a)$$

with R_1, R_2 on the first N, X^-, and R_3, R_4 on the second N, X^-

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array} -(CH_2)_p-\underset{H}{N}-\underset{O}{C}-D-\underset{H}{N}-(CH_2)_p-\begin{array}{c} CH_3 \\ | \\ N^+ \\ | \\ CH_3 \end{array}-(CH_2)_2-O-(CH_2)_2- \right] $$

$2X^-$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids, and

- a second compartment comprises at least one oxidizing agent and a combination comprising at least one cyclohomopolymer of dialkyldiallylammonium as defined above and at least one other quaternary polyammonium polymer as defined above.

86. (Amended)   A kit for dyeing keratin fibers comprising at least two compartments, wherein:

- a first compartment comprises at least one oxidation dye and at least one cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain, at least one unit of structure (VI):
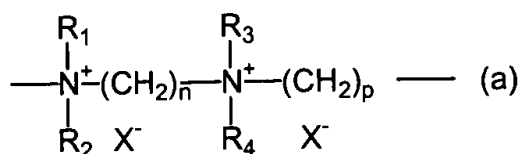
$$(VI) \qquad -(CH_2)_t(R_{12})C \underset{H_2C}{\overset{(CH_2)_k}{\underset{\underset{R_{10}}{\overset{|}{N^+}}}{\big\langle}}} C(R_{12})(CH_2)- \qquad Y^-$$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl groups;

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion, and wherein:

- a second compartment comprises at least one oxidizing agent and at least one quaternary polyammonium polymer chosen from:

(i) polymers comprising repeating units of formula (a):

$$—\overset{\overset{\displaystyle R_1}{|}}{\underset{\underset{\displaystyle R_2}{|}}{N^+}}—(CH_2)_{\overline{n}}—\overset{\overset{\displaystyle R_3}{|}}{\underset{\underset{\displaystyle R_4}{|}}{N^+}}—(CH_2)_p \quad — \quad (a)$$
$$X^- \qquad\qquad X^-$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;
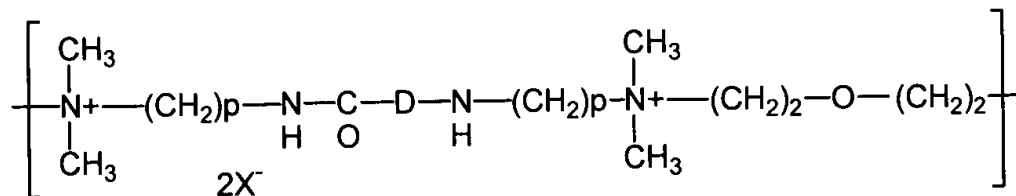
- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

-Appendix 29-

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

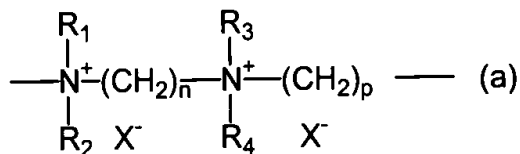(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r-CO-$ groups, wherein r is a number equal to 4 or 7, and

- X⁻ is an anion chosen from anions derived from inorganic acids and anions derived from organic acids.

89. (Amended)   A kit for dyeing keratin fibers comprising at least two compartments, wherein:

- a first compartment comprises at least one oxidation dye and at least one quaternary polyammonium polymer chosen from:
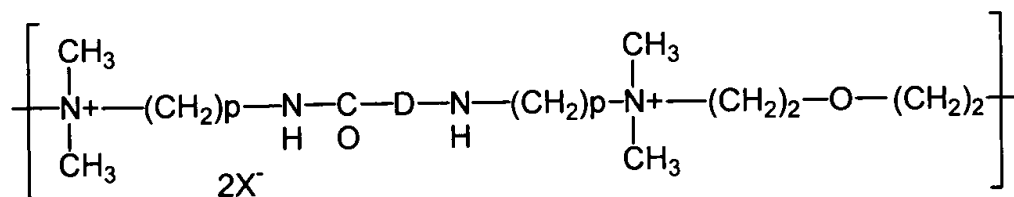
(i) polymers comprising repeating units of formula (a):

$$-\underset{\underset{R_2\ \ X^-}{|}}{\overset{\overset{R_1}{|}}{N^+}}-(CH_2)_{\overline{n}}-\underset{\underset{R_4\ \ X^-}{|}}{\overset{\overset{R_3}{|}}{N^+}}-(CH_2)_p-\quad(a)$$

wherein:

- R_1, R_2, R_3 and R_4, which may be identical or different, are each chosen from alkyl groups comprising from 1 to 4 carbon atoms and hydroxyalkyl groups comprising from 1 to 4 carbon atoms;

- n and p, which may be identical or different, are each chosen from integers ranging from 2 to 20; and

- X^- is an anion chosen from anions derived from inorganic acids and anions derived from organic acids; and

(ii) polyquaternary ammonium polymers comprising repeating units of formula (VIII):

$$\left[\underset{\underset{CH_3}{|}\ \ 2X^-}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)p-\underset{\underset{H}{|}}{N}-\underset{\underset{O}{\|}}{C}-D-\underset{\underset{H}{|}}{N}-(CH_2)p-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{N^+}}-(CH_2)_2-O-(CH_2)_2\right]$$

(VIII)

wherein:

- p is an integer ranging from 1 to 6,

- D is chosen from direct bonds and $-(CH_2)_r$-CO- groups, wherein r is a

number equal to 4 or 7, and

- X^- is an anion chosen from anions derived from inorganic acids and

anions derived from organic acids, and wherein:

- a second compartment comprises at least one oxidizing agent and at least one

cyclohomopolymer of dialkyldiallylammonium comprising, as a constituent of the chain,

at least one unit of structure (VI):

$$-(CH_2)_t(R_{12})C \overset{\displaystyle (CH_2)_k}{\underset{\displaystyle H_2C \quad \overset{+}{N} \quad CH_2}{}} C(R_{12})(CH_2)- \quad Y^-$$

(VI) ... $R_{10} \quad R_{11}$

wherein:

- k and t [, which may be identical or different,] are each chosen from 0 and 1, with the

proviso that the sum of k + t is equal to 1;

- R_{12}, which may be identical or different, are each chosen from hydrogen atoms and

methyl groups;

- R_{10} and R_{11}, which may be identical or different, are each chosen from alkyl groups

comprising from 1 to 22 carbon atoms, hydroxyalkyl groups, and C_1-C_4 amidoalkyl

groups;

-Appendix 32-

- R_{10} and R_{11}, together with the nitrogen atom to which they are commonly bonded, may additionally form at least one heterocyclic group;

- Y^- is an anion.